

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A computer system to ~~for~~ virtually organize ~~organizing~~ content of a plurality of disparate content repositories, content organizing structures of the plurality of disparate content repositories, work items of a plurality of disparate workflow systems, and ~~and/or work organizing structures of the~~ ~~from a plurality of disparate content repositories and/or-workflow systems, the system~~ comprising:

a processor; and

a memory comprising:

an application program interface (API), executable by said processor, to interface for ~~interfacing with a software application-written to provide access to the system; and~~

at least one a virtual repository comprising a plurality of nodes, a first node of the plurality of nodes linking to a work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a content organizing structure of the second content repository, wherein the API provides access to the virtual repository, wherein the work organizing structure of the first workflow system is one of: a queue and a task list, wherein the work organizing structure of the second workflow

system is one of: another queue and another task list, wherein the content organizing structure of the first content repository is a folder, wherein the content organizing structure of the second content repository is another folder that link to select items from the plurality of content repositories and/or workflow systems and provide organizational structure for the virtual repository.

Claim 2 (currently amended): The system of claim 1 wherein creation of the virtual repository does not replicate any of the content, content organizing structures, work items, and/or and work organizing structures; are not replicated or impacted by and wherein the creation of the at least one virtual repository does not impact any of the content, content organizing structures, work items, and work organizing structures.

Claim 3 (currently amended): The system of claim 1 wherein creation of the virtual repository does not impact any of an the-existing organization of any of the content, content organizing structures, work items, and work organizing structures,

wherein creation of the virtual repository does not impact any functions of any of the content, content organizing structures, work items, and work organizing structures,

wherein creation of the virtual repository does not impact any indexing of any of the content, content organizing structures, work items, and work organizing structures, and

wherein creation of the virtual repository does not impact any security of any of the content, content organizing structures, work items, and and/or-work organizing structures are not impacted by the creation of the at least one virtual repository.

Claim 4 (original): The system of claim 1 wherein the API is in a format selected from the group consisting of Java, Component Object Model (COM), Simple Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 5 (currently amended): The system of claim 1 further comprising at least one of a graphical user interface and ~~or~~ a web-based interface.

Claim 6 (original): The system of claim 1 wherein the nodes are arranged in a parent-child hierarchy.

Claim 7 (currently amended): The system of claim 1 wherein ~~each node is of the type selected from the group consisting of links~~ the fifth node is of a type of a link to a repository content, the sixth node is of the type of the link to the repository content, links the seventh node is of the type of a link to a repository folder ~~folders~~, the eighth node is of the type of the link to the repository folder, the first node is of the type of links a link to a workflow system work items, the second node is of the type of the link to the workflow system work item, the third node is of the type of a links-link to a workflow system work queue ~~queues~~, the fourth node is of the type of the link to the workflow system work queue, wherein the virtual repository comprises:

_____ a ninth node being of the type of a virtual folder ~~folders~~,
_____ a tenth node being of the type of a link to a folder ~~folders~~ populated by saved repository search,
_____ an eleventh node being of a type of a link to a folder populated by ~~or a~~ workflow system search ~~searches~~, and links
_____ a twelfth node being of a type of a link to an external resource ~~resources~~ via a URL ~~URLs~~.

Claim 8 (currently amended): The system of claim 1 wherein the nodes contain meta-data properties in addition to the meta-data maintained in their respective underlying said content repositories and/or and said workflow systems, wherein the meta-data properties of the nodes describe a use of the content, content organizing structures, work items and work organizing structures of that describe how the select items are used in the virtual repository.

Claim 9 (currently amended): The system of claim 1 wherein at least one content repository of the plurality of content repositories has access control rules to the content and the content organizing structures, wherein at least one workflow system of the plurality of workflow systems has access control rules to the work items and the work organizing structures, wherein the nodes of the virtual repository have comprise supplemental access control rules of the virtual repository in addition to the access control rules maintained in their respective underlying content repositories and/or workflow systems, wherein the supplemental access control rules are applied to the nodes within the virtual repository, wherein the supplemental access control rules describe supplemental security constraints to the content and content organizing structures of the at least one content repository, wherein the supplemental access control rules describe security constraints to the work items and work organizing structures of the at least one workflow system describing how the select items are secured in the virtual repository.

Claim 10 (currently amended): The system of claim 1 wherein the ~~at least one~~ virtual repository ~~is can be~~ exported to an XML representation and imported from the same XML representation.

Claim 11 (currently amended): The system of claim 1 further comprising a middleware platform to abstract a particular content repository of the plurality of content repositories of the virtual repository, and/or and another middleware platform to abstract a particular workflow system of the plurality of workflow systems used in of the at least one virtual repository.

Claim 12 (currently amended): The system of claim 1 further comprising ~~a set of~~ adaptors to allow the system to provide access to specific content repositories and/or and workflow systems.

Claim 13 (currently amended): The system of claim 1 further comprising an adaptor toolkit ~~that enables the system~~ to build interfaces to future developed content repositories ~~and/or~~ and workflow systems.

Claim 14 (currently amended): A computer system to provide ~~for providing~~ access to workflow in a plurality of disparate workflow systems having a plurality of proprietary program interfaces, ~~the system~~ comprising:

a processor; and

a memory comprising:

an application program interface (API) that, when executed by the processor,
interfaces ~~for interfacing~~ with a software application ~~written to provide access to the system;~~

an access services component that, when executed by the processor, relays requests to access workflow items in the plurality of workflow systems from the API to a plurality of bridges; ~~and~~

a plurality of bridges that, when executed by the processor, translate user requests into requests understandable by the proprietary program interfaces of the plurality of disparate workflow systems; ~~and~~

a universal workflow item attachment function to attach content from any content repository of a plurality of disparate content repositories to a plurality of different work items from different workflow systems of the plurality of disparate workflow systems, and to attach any content organizing structure from said any content repository of said plurality of disparate content repositories to another plurality of different work items from different workflow systems of the plurality of disparate workflow systems.

Claim 15 (original): The system of claim 14 wherein the API is in a format selected from at least one of: the group consisting of Java, Component Object Model (COM), Simple Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 16 (currently amended): The system of claim 14 further comprising at least one of a graphical user interface and ~~or~~ a web-based interface.

Claim 17 (currently amended): The system of claim 14 further comprising a universal in-box that presents to the user the work items from the plurality of workflow systems ~~intended for that single user~~ based on the users' identity, role membership and group membership in each workflow system of the plurality of workflow systems.

Claim 18 (currently amended): The system of claim 14 wherein the access services component maps workflow meta-data properties across the plurality of workflow systems to a single common meta-data property by mapping at least one of: the a name, a data type of the property, and a ~~and/or~~ value transformation of the meta-data.

Claim 19 (original): The system of claim 14 further comprising an exchange services server that enables import and export of workflow items and meta-data properties in the plurality of workflow systems.

Claim 20 (original): The system of claim 14 wherein a single bridge corresponds to a single workflow system.

Claim 21 (original): The system of claim 14 further comprising a bridge factory that is configured to generate a new bridge to support each new workflow system.

Claim 22 (original): The system of claim 14 wherein each bridge accesses the underlying workflow system via a mode selected from the group consisting of Java, Component Object Model (COM), Java Native Interface (JNI) or Simple Object Access Protocol (SOAP) Web Services.

Claim 23 (canceled).

Claim 24 (currently amended): A ~~computer system to create~~~~for creating~~ rich relationships between ~~two or more pieces of~~ content, content organizing structures, work items ~~and~~ ~~and/or~~ work organizing structures that exist in a plurality of content repositories, a plurality of workflow systems and at least one ~~and/or~~ other external information source ~~sources~~, the ~~system~~ comprising:

a processor; and

a memory comprising:

_____ an application program interface (API) for interfacing, executable by the processor, to interface with a software application ~~written to provide access to the system;~~

_____ a plurality of nodes, wherein the API provides an interface to the plurality of nodes, a first node of the plurality of nodes linking to a work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a content organizing structure of the second content repository;

_____ a plurality of associations describing relationships between the nodes, each association of said plurality of associations having at least two nodes that are members of that association, said each association describing a relationship between the members of that association, said each association also being a node; and

_____ locators to reference and de-reference entities external to the system, a first locator to a first external reference, the first locator leverages workflow integration middleware to reference said first work item of said first workflow system; a second locator to a second

external reference, the second locator leverages workflow integration middleware to reference said second work item from said second workflow system; a third locator to a third external reference, the third locator leverages workflow integration middleware to reference said work organizing structure of said first workflow system, a fourth locator to a fourth external reference, the fourth locator to reference said work organizing structure of said second workflow system; a fifth locator to a fifth external reference, the fifth locator leverages content integration middleware to reference said content of said first content repository; a sixth locator to a sixth external reference, the sixth locator leverages content integration middleware to reference said content of said second content repository; a seventh locator to a seventh external reference, the seventh locator leverages content integration middleware to reference said content organizing structure of said first content repository; an eighth locator to an eighth external reference, the eighth locator to reference said content organizing structure of said second content repository; and an extensible locator interface to provide a locator to another external system, wherein a system of nodes, members, and associations is used to describe the relationships between the two or more pieces of content: content organizing structures, work items and/or work organizing structures.

Claim 25 (original): The system of claim 24 wherein the API is in a format selected from the group consisting of Java, Component Object Model (COM), Simple Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 26 (currently amended): The system of claim 24 further comprising at least one of a graphical user interface ~~or and~~ a web-based interface.

Claim 27 (currently amended): The system of claim 24 wherein the plurality of nodes represent content, content organizing structures, work items and and/or work organizing structures that will ~~can~~ participate in relationships with information, said information for each node of the plurality of nodes comprising at least one selected from the group consisting of;

meta-data describing said each the node, at least one role roles played in at least one association associations with another node other nodes, or more scoped names, a unique identifier of the subject of ~~the~~ said each node, a locator of the external subject of ~~the~~ said each node, and 0 or more node types.

Claim 28 (canceled).

Claim 29 (currently amended): The system of claim 24[[28]] wherein the an-association has said at least two or more members ~~that~~ which are nodes playing a specific named role in the association.

Claim 30 (currently amended): The system of claim 24 wherein a member represents a ~~members represent the~~ specific role a node plays in the an-association.

Claim 31 (currently amended): The system of claim 30 wherein the member has members ~~have~~ a player specifying the node playing the role in the association.

Claim 32 (currently amended): The system of claim 24 wherein the associations ~~can~~ have 0 or more association types, wherein the association types have logical properties describing about the type of the relationship, wherein any association types comprise at least one of: ~~and are selected from the group consisting of an~~ allowed cardinality of the relationship, allowed members of the relationship, required members of the relationship, a transitivity of the relationship, a delete propagation across the relationship, and a save propagation across the relationship.

Claim 33 (canceled).

Claim 34 (currently amended): A computer system to provide ~~for providing~~ for notification of at least one or more event handler, ~~handlers when additions, changes or deletions occur to~~

~~any-subscribed-to-content, content-organizing-structures, content-repository-searches, federated-content-repository-searches, work-items, work-organizing-structures-of-the-plurality-of-workflow-systems, workflow-system-searches-and/or-federated-workflow-system-searches that exist in a plurality-of-content-repositories, workflow-systems-and/or-at-least-one-other external-information-sources-and comprising:~~

a processor; and

a memory comprising:

an application program interface (API), executable by the processor, to interface for interfacing with a software application-written-to-provide-access-to-the-system; and

a plurality of subscriptions to a plurality of subscribed-to-items, respectively, wherein the API interfaces the software application to the plurality of subscriptions; the subscribed-to-items comprising a first content of a first content repository, a first content organizing structure of the first content repositorystructures, content-repository-searches, federated content-repository-searches, a first work item of a first workflow systemitems, a first work organizing structure of the first workflow systemstructures, workflow-system-searches-and/or federated-workflow-system-searches-a second content of a second content repository, a second content organizing structure of the second content repository, a second work item of a second workflow system, a second work organizing structure of the second workflow system;

wherein the subscriptions are requests to track when at least one of an addition, change and delete occurs to any of the subscribed-to-items, respectivelyadditions, changes-or deletions-occur-to-any-subscribed-to-content, content-organizing-structures, content-repository-searches, federated-content-repository-searches, work-items, work-organizing-structures, workflow-system-searches-and/or-federated-workflow-system-searches.

Claim 35 (currently amended): The system of claim 34 wherein each subscription of the plurality of subscriptions is are stored with information comprising at least one of: selected from the group consisting of meta-data describing said each the-subscription, stored-and encrypted user credentials to be used when later-detecting a change of the subscribed-to-item, a stored latest-monitored state representation of the subscribed-to-item-from-the-last-time-it

was monitored for change, with in an XML format version of the stored state representation, and with a membership in a logical subscription group.

Claim 36 (original): The system of claim 34 wherein the API is in a format selected from the group consisting of Java, Component Object Model (COM), Simple Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 37 (currently amended): The system of claim 34 further comprising at least one of a graphical user interface ~~or~~ and a web-based interface.

Claim 38 (currently amended): The system of claim 34 wherein logical groups organize like subscriptions with at least one of: a common polling interval for a group and ~~or~~ with a common event path for a group; wherein said event path comprises a timer, a group processor, a content monitor, an event filter and an event handler.

Claim 39 (currently amended): The system of claim 34 further comprising an event path defined per a logical group comprising a timer, a subscription group processor that creates events based on the subscriptions in response to the timer, a content monitor that detects change based on the events, an event filter that filters uninteresting change and interesting change, and an event handler that receives the interesting change components.

Claim 40 (currently amended): The system of claim 39 wherein the timer initiates periodic polling of the first and second content repositories and the first and second workflow systems to detect a for change that needs notification.

Claim 41 (currently amended): The system of claim 39 wherein the subscription group processor initiates events on eligible subscriptions of [[in]] a subscription group.

Claim 42 (currently amended): The system of claim 39 wherein the content monitor comprises a plug-in software module to detect for detecting change in the subscribed-to-itemsmonitored items.

Claim 43 (currently amended): The system of claim 39 wherein the event filter comprises plug-in modules that filter for-filtering interesting and uninteresting changes in the subscribed-to-items, wherein the changes are filtered based on a meta-data value of at least one of the subscribed-to-itemsmonitored items.

Claim 44 (currently amended): The system of claim 39 wherein a subscription context is made available to event path plug-ins, content monitors, event filters, and event handlers with access selected from at least one the group consisting of: access to a live content integration middleware session, access to a live workflow integration middleware session, access to a statistics reporting API, access to an error reporting API, access to a logging API, and access to the active subscription for the plug-in.

Claim 45 (currently amended): The system of claim 34 further comprising a statistics module to gather for-gathering runtime statistics on events passing through each step of an event path and displaying said statistics; wherein said event path comprises a timer, a group processor, a content monitor, an event filter and an event handler.

Claim 46 (currently amended): The system of claim 34 wherein an event is created when a change is detected with the subscription for the event, meta-data describing the event, an event path the event will follow, and an open schema wherein so that any content repositories or workflow systems with internally defined event mechanisms will can post events to the federated event system without polling for change and any workflow systems with internally defined event mechanisms will post events to the federated event system without polling for change.

Claim 47 (new): The system of Claim 34 wherein the subscribed-to-items further comprise: a first content repository search of the first content repository, a first federated content repository search of a plurality of content repositories, a first workflow system search of the first workflow system, a federated workflow system search of a plurality of workflow systems.

Claim 48 (new): A computer-implemented method of virtually organizing content of a plurality of disparate content repositories, content organizing structures of the plurality of disparate content repositories, work items of a plurality of disparate workflow systems, and work organizing structures of the plurality of disparate workflow systems, comprising:
providing an application program interface (API) to a virtual repository; and
accessing the virtual repository via the API, wherein the virtual repository comprises a plurality of nodes, a first node of the plurality of nodes linking to a work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a content organizing structure of the second content repository, wherein the work organizing structure of the first workflow system is one of: a queue and a task list, wherein the work organizing structure of the second workflow system is one of: another queue and another task list, wherein the content organizing structure of the first content repository is a folder, wherein the content organizing structure of the second content repository is another folder.

Claim 49 (new): A computer-implemented method of providing access to workflow in a plurality of disparate workflow systems having a plurality of proprietary program interfaces, comprising:

interfacing, via an application program interface (API), a software application to an access services component;

relaying, by an access services component, user requests from the API to access workflow items in the plurality of workflow systems to a plurality of bridges;

translating, by a plurality of bridges, user requests to requests understandable by the proprietary program interfaces of the plurality of disparate workflow systems;

attaching content from any content repository of a plurality of disparate content repositories to a plurality of different work items from different workflow systems of the plurality of disparate workflow systems; and

attaching any content organizing structure from said any content repository of said plurality of disparate content repositories to another plurality of different work items from different workflow systems of the plurality of disparate workflow systems.

Claim 50 (new): A computer-implemented method of creating rich relationships between content, content organizing structures, work items and work organizing structures that exist in a plurality of content repositories, a plurality of workflow systems and at least one external information source, comprising:

interfacing, via an application program interface (API), a software application;

creating, via the API, a plurality of nodes, wherein the API provides access to the plurality of nodes, a first node of the plurality of nodes linking to a work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a content of a first content repository of said plurality of disparate content

repositories, a sixth node of the plurality of nodes linking to a content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a content organizing structure of the second content repository;

creating a plurality of associations describing relationships between the nodes, each association of said plurality of associations having at least two nodes that are members of that association, said each association describing a relationship between the members of that association, said each association also being a node; and

providing locators to reference and de-reference entities external to the system, a first locator to a first external reference, the first locator leverages workflow integration middleware to reference said first work item of said first workflow system; a second locator to a second external reference, the second locator leverages workflow integration middleware to reference said second work item from said second workflow system; a third locator to a third external reference, the third locator leverages workflow integration middleware to reference said work organizing structure of said first workflow system, a fourth locator to a fourth external reference, the fourth locator to reference said work organizing structure of said second workflow system; a fifth locator to a fifth external reference, the fifth locator leverages content integration middleware to reference said content of said first content repository; a sixth locator to a sixth external reference, the sixth locator leverages content integration middleware to reference said content of said second content repository; a seventh locator to a seventh external reference, the seventh locator leverages content integration middleware to reference said content organizing structure of said first content repository; an eighth locator to an eighth external reference, the eighth locator to reference said content organizing structure of said second content repository; and an extensible locator interface to provide a locator to another external system.

Claim 51 (new): A computer-implemented method of providing notification of at least one event handler, comprising:

interfacing, via an application program interface (API), with a software application; and

creating, via the API, a plurality of subscriptions to a plurality of subscribed-to-items, respectively, wherein the API interfaces the software application to the plurality of subscriptions; the subscribed-to-items comprising a first content of a first content repository, a first content organizing structure of the first content repository, a first work item of a first workflow system, a first work organizing structure of the first workflow system, a second content of a second content repository, a second content organizing structure of the second content repository, a second work item of a second workflow system, a second work organizing structure of the second workflow system; wherein the subscriptions are requests to track when at least one of an addition, change and delete occurs to any of the subscribed-to-items, respectively;

detecting at least one event based on the plurality of subscriptions; and

providing a notification of said at least one event to at least one event handler.